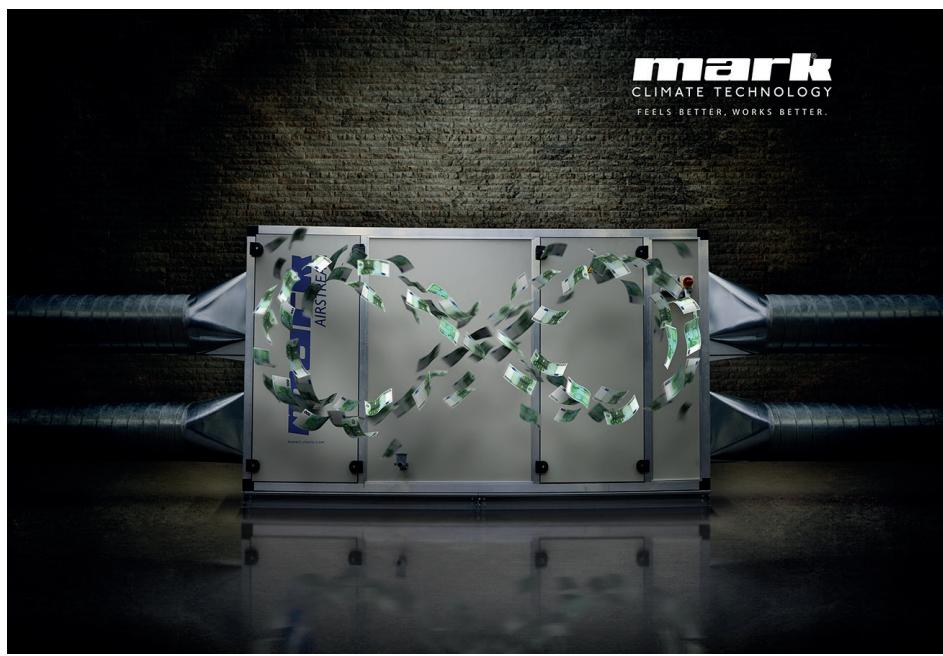


mark®

Technical manual EN

MARK WTW AIRSTREAM

0661130



Read this document before installing the appliance

EN

Warning

An incorrectly performed installation, adjustment, alteration, repair or maintenance activity may lead to material damage or injury. All work must be carried out by approved, qualified professionals. If the appliance is not positioned in accordance with the instructions, the warranty shall be voided. This appliance is not meant for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they are under supervision or are instructed about the use of the appliance by a person who is responsible for their safety. Children should be monitored to make sure that they will not play with the appliance.

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I The aim of this manual

This manual is intended to correctly install and maintain the Mark air handling units during its lifetime. It is recommended to study this manual well so that the appliance can be maintained correctly. In case problems arise, this manual can help the user to make a quick diagnose. Changes and maintenance should be executed by qualified personnel to avoid damage to the appliance. This appliance is not meant for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they are under supervision or are instructed about the use of the appliance by a person who is responsible for their safety. Children should be monitored to make sure that they will not play with the appliance.

2 General description

The Mark air handling units meet all regulations.

The design of the units guarantees a minimal consumption of energy.

The applied materials and components guarantee a long durability.

2.1 General features

Extruded aluminum frame with sandwich panels (45 mm) consisting of:

- Coated galvanized outer plate (polyester 25 micron, colour RAL 9002).
- Galvanized inside plate.
- Environmentally friendly water-foamed PUR, 45kg /m³ which guarantees a high acoustic and thermal insulation.
- Thermal bridge-free construction.
- Standard hygienic version by unit of a unique rubber seal.

2.2 Mark Airstream series with aluminum counterflow heat exchanger

The Mark Airstream series consists of fully wired, compact ventilation units, qualified for both internal as external placing. The units distinguish themselves by very low internal air speeds and are therefore guaranteed for a minimal consumption of energy per m³ of displaced air (SFP Value). Due to their low air speeds and the accurate selection of ventilators, the level of sound is extremely low.

Features:

- Aluminium counterflow plate heat exchangers, efficiency up to 90%.
- Fans provided by motors with EC technology.
- Full bypass possible by applying face and bypass valves.
- Frost protection of the exchangers included in the regulations.
- Application of high quality filters for the lowest possible air resistance.

Optional:

- Integrated valves for fresh air, return air, recirculation air.
- Integrated silencers.
- Integrated pre- and re-heater, electrical, warm water, change-over.
- Integrated cooler, cold water, DX, change-over.

2.3 IC integrated cooling system including control system

The Mark Airstream series are constructed with an integrated cooler (IC). Depending on the cooling capacity, the cooling system is constructed with one or more compressors of which the first compressor is digital. The digital compressor can be set up in power from 10-100%. The DX-cooler and condenser are included in the unit. The cooler in the supply air, the condenser in the exhaust air. The installation is completely connected and filled with medium R 410A. The cooling system is included in the unit's control system. The hydraulic- and electrical scheme can be found inside the folder on the inside of the inspection door of the cooling section. This is also the section where the log of the installation can be found.

3 Installation

3.1 Placement

Depending on the size, the unit is executed with galvanized steel feet, or a galvanized base frame with eyebolts. In each case the unit should be positioned levelly. This is important to drain of the condensed water. Depending on the underground it is wise to place vibration mats under the feet of the foundation frame. This can be done to avoid possible contact sound. There should be a free space of minimal 600 mm on the operational side. This space is needed for the maintenance of the appliance and to replace the filters.

3.2 Duct connections

The fresh air supply duct and the air exhaust duct should be completely damp proof insulated between the roof and/or facade and the Mark Airstream unit. This should be done to prevent condensation on the outside of the duct. The inside air supply duct system should be insulated in case it is found outside the insulated shell of the building. This should be done because of possible noise from the ventilator. Also, the existence of crosstalk-sound between two rooms which are connected through the same channel should be taken into consideration. In this case a crosstalk-damper should be applied.

3.3 Condensation drain

In the section where the drip tray is placed, there is a low pressure with a maximum of 650 Pa. To drain the condensation water well, it is necessary to place a ball siphon. A ball siphon will be connected to the outside of the case on the condensation drain (min 40 mm). The condensation water can be drained through the internal sewer. With an outside placement (roof version) the condensation water can be discharged on the roof through the ball siphon. The unit produces the most condensation in the cooler months. A heated siphon is available for external versions. This siphon ensures the condensation to be drained well during frost. The ball siphon also ensures that with a connection to the sewer no sewer air will get into the unit.

3.4 Frost protection

To prevent the freezing of the aluminium heat exchanger, a safe guard is installed into the control system. This works completely automatically and is pre-set in the factory.

3.5 Electrical connections

The Mark Airstream unit is internally completely wired. The isolation switch and the cable box for remote control are mounted outside the unit. The power supply should be connected to the isolation switch. Depending on the type of unit, this will be 230V or 400V. This is stated on the type plate on the inside of the inspection door. On the type plate the internal MCB protection of the unit is also mentioned, where the MCB protection in the meter can be determined with.

The remote and cabling for BMS, start / stop, fire alarm, and any other external controllers be connected on the junction box. The diagram for above-mentioned connections can be found on the inside of the inspection door.

4 Control system

4.1 Integrated control system

The Mark Airstream series is supplied with an extremely modern control system which is standardly delivered as a “stand alone”. The control system is very flexible and especially designed for balanced ventilation systems where it can be expanded and modified to the needs of the client. The control system is suitable for the most conventional data communication-protocols and can easily be added in for example building management systems. The detailed and intelligent design makes the control system very user-friendly. The built-in webserver, with three user levels, makes the use and operation of the control system very easy and effective. The control system is ready for the future, is flexible and saves time and costs because of its user-friendliness. Due to the intelligent user-interface, the control system is easy to implement, use and maintain. The control system is reliable and tuned to a lowest possible energy use of the installation. The control system communicates through RS 485 Modbus and is built around a powerful ARM9 processor. The operation is based on Linux.

5 Operation

The control system of the unit can be used in two ways.

5.1 Operation with the hand terminal

The hand terminal serves the unit through graphical representation. All temperatures, set-points, clock times and alarm reports can be shown in the display. All menu's and graphical representations only contain relevant information. Alarm reports that will be activated through the system have the highest priority and will be reported through a blinking red LED. Alarm reports are always shown graphically in the top of the display. Only authorized users can edit the system parameters and the access to the control system can be granted in three different levels:

- User
- Installer
- Service



User

The “user” menu is suitable for daily use including editing the temperature and clock times. It also shows possible alarm reports and can reset reports.

Installer

With the “Installer” menu system parameters can be edited and set up. Next to a system-maintenance program, parameters like minimum and maximum air supply, minimum and maximum supply air temperature and functions in case of fire alarm can also be set up. Communication parameters and language of choice can also be set up.

Service

With the “Service” menu the actual status of the system will be shown, such as airflows, pressures, power of different components and temperatures.

5.1.1 Installation

The hand terminal can be hung unto the supplied wall mounting clip. The hand terminal will be connected by means of a supplied modular cable in the junction box to the ventilation unit. The hand terminal communicates with the control system through Modbus, RS 485 protocol. The hand terminal is carried out with 2 LED's. The green LED lights when the hand terminal is connected and the isolating switch on the ventilation unit is turned. The red LED blinks in case of an alarm report.

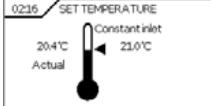
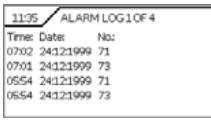
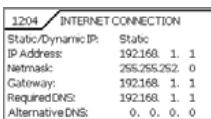
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Specifications

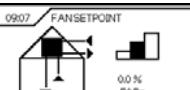
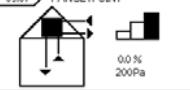
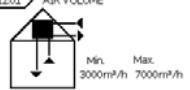
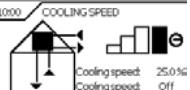
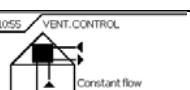
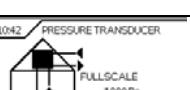
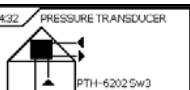
Voltage	24V DC, ±15%,
Absorbed current	45 mA
Modbus	RS-485, 115 kBaud
Modbus connection	2 x RJ12 6/6
Maximum cable length	50 m (in low EMC environment)
Display	Monochrome, 240 x 128 pixel, backlit
Scroll wheel	24-step, turn-and-push dial
LEDs	1 x green / 1 x red
Push buttons	Membrane buttons 1 x ESC / 1 x ?
Environment temperature	0°C /+50°C
Humidity	10-95% RV
Dimensions	170 x 40 x 82 mm
Modbus cable	MPFK6S
Enclosure class	IP20, ABS
Weight	15 g

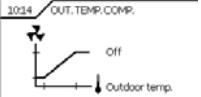
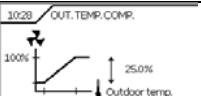
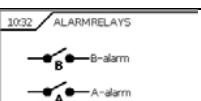
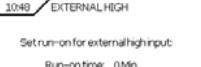
5.1.2 User instructions

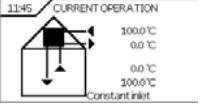
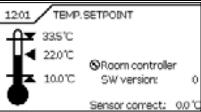
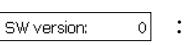
Main menu	Submenu 1	Submenu 2	Submenu 3	Description
1538 0) AIR2 USER ◀ □ ▶				User level Provides access to operating times, temperature setpoints, alarms, software version and IP address.
1541 M USER FAN OPERATION ▼				Set fan operation Standard menu display when handset is not in use and no alarms are active.
	0241 FANOPERATION SERVICE STOP MODE EDIT WEEKLY PROGRAM			Set fan operation mode Manual stop, low or high speed. Automatic operation according to weekly program.
	0355 FANOPERATION WARNING: Manpower must be interrupted! SERVICE STOP MODE EDIT WEEKLY PROGRAM			SERVICE: The system is in "Service stop" and can only be restarted via this function using the hand terminal. This prevents unintended activation and operation.
	0349 SELECT WEEKLY PROGRAM MTWTFSS All week			View actual weekly program type
	0340 SELECT WEEKLY PROGRAM MTWTFSS MTWTFSS UTWTFSS			Set weekly program type <ul style="list-style-type: none"> • Same program all week • Weekdays & weekends • Individual daily program
	0350 Start Stop MTWTFSS Monday - Sunday Start: 00:00 - 16:00 Stop: 00:00 - 06:00 06:00 - 08:00 16:00 - 24:00 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14			Set weekly program Four timers per menu display can be freely set to stop, low or high speed. High speed has first priority if times overlap.
				<u>Weekly program type</u> <u>No. of menu displays</u> All week 1 Weekdays & weekends 2 Daily program 7
1542 M USER EXTENDED OPERATION ▼				Set extended operation
	0551 EXTENDED OPERATION Start: 00:00 Monday Stop: 00:00 Monday Mode: □ Active: Off Rem.Timer: 0Day(s) 00:00			Extended operation overrides the weekly program with low or high speed settings for a set period within 7 days. Extended operation must be selected to become active. Once the period has expired, operation automatically returns to the weekly program.
1542 M USER TEMPERATURE ▼				Set temperature setpoint

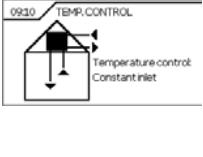
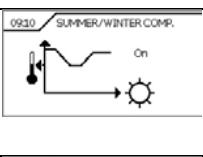
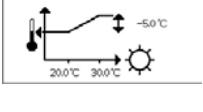
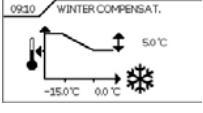
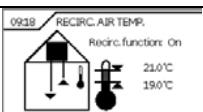
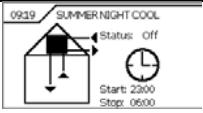
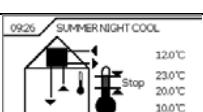
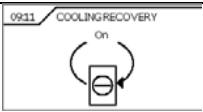
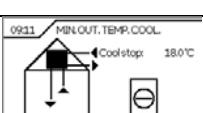
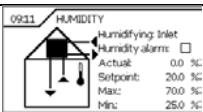
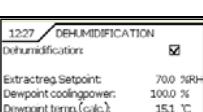
		Set temperature setpoint and view actual temperature. Viewing actual control mode: <ul style="list-style-type: none">• Const. inlet• Const. exhaust• Const. room.• Const. In-/out diff.
		Set time and date
		Set the built-in clock. The clock is used by the weekly program, etc.
		View most recent alarms
		View time, date and alarm code for the latest four alarms. Similar logs for the latest 5-16 alarms are shown in subsequent menu displays.
		View actual software version
		View the actual software version in: <ol style="list-style-type: none">1. controller (OJ-Air2Master)2. handset (OJ-Air2Hterm)
		Set Internet connection TCP/IP
		Set static/dynamic IP address. If dynamic (DHCP) is selected, an address is allocated by the network concerned.

5.1.3 Installer instructions

Main menu	Submenu 1	Submenu 2	Submenu 3	Description
1539 / OAIR2 INSTALLER ◀ 🔒 ▶				Installer level Provides access to control types and built-in functions.
	0904 / INSTALLER Password: 1 1 1 1			A password must be entered to allow access to underlying menus. <ul style="list-style-type: none">• Password: 1 1 1
	1524 / FAN OPERATION ▼			Set fan operation Set fan control type, setpoints and automatic functions.
		0906 / CURRENT OPERATION  0 m³/h 0 m³/h 0 m³/h 0 Pa		View actual operating values <ul style="list-style-type: none">• Fresh air [m³/h] [l/s]• Discharge [m³/h] [l/s]• Exhaust [m³/h] [l/s] [Pa] [ppm CO₂] [%]• Inlet [m³/h] [l/s] [Pa] [%]
		0907 / FANSETPOINT  0.0 % 50 Pa		Set low speed setpoint <ul style="list-style-type: none">• Exhaust [m³/h] [l/s] [Pa] [ppm CO₂] [%]• Inlet [m³/h] [l/s] [Pa] [%]
		0907 / FANSETPOINT  0.0 % 200 Pa		Set high speed setpoint <ul style="list-style-type: none">• Exhaust [m³/h] [l/s] [Pa] [ppm CO₂] [%]• Inlet [m³/h] [l/s] [Pa] [%]
	1201 / AIR VOLUME  Min: 3000m³/h Max: 7000m³/h	Not displayed for control type: m3/h		Set air volume <ul style="list-style-type: none">• Min. exhaust [m³/h] [l/s] *1• Min. inlet [m³/h] [l/s] *2• Max. exhaust [m³/h] [l/s] *1• Max. inlet [m³/h] [l/s] *2 <p>*1) Not displayed with exhaust slave *2) Not displayed with inlet slave</p>
	1000 / COOLING SPEED  Cooling speed: 25.0 % Off	Only displayed if cooling installed		Set cooling speed <ul style="list-style-type: none">• Forced cooling: On/Off• % increase in fan speed when cooling is active
	1055 / VENT.CONTROL  Constant flow m³/h m³/h			Set fan control type Control type: <ul style="list-style-type: none">- Constant pressure [Pa]- Constant flow [m³/h] [l/s]- Exhaust slave [Pa] & [m³/h] [l/s]- Inlet slave [Pa] & [m³/h] [l/s]- Constant CO₂ [ppm CO₂]- Fan optimizer [%]- Fan optimizer slave [%] & [m³/h] [l/s]
	1042 / PRESSURE TRANSDUCER  FULLSCALE 1000Pa 1000Pa	Only displayed for control type: Pa & 0-10V pressure transmitter		Set pressure transducer full scale <ul style="list-style-type: none">• Exhaust 10 V = xx Pa• Inlet 10 V = xx Pa
	1432 / PRESSURE TRANSDUCER  PTH-6202Sw3 PTH-6202Sw3	Only displayed for control type: Pa & Modbus pressure		Read out pressure transducer address <ul style="list-style-type: none">• Exhaust Pressure transmitter address• Inlet Pressure transmitter address

		 <p>1034 OUT TEMP COMP.</p>	Set fan compensation
		 <p>1029 OUT TEMP COMP.</p> <p>100% 25.0%</p> <p>-20.0°C 5.0°C</p> <p>Outdoor temp.</p>	Set outdoor temp. compensation <ul style="list-style-type: none"> • Max. setpoint reduction [%] • Outdoor temp. for full compensation [°C] • Outdoor temp. for start compensation [°C]
		 <p>1032 ALARMRELAYS</p> <p>B B-alarm</p> <p>A A-alarm</p>	Set alarm relay function <p>Set B-alarm relay function, e.g. to operate an extra fan.</p> <ul style="list-style-type: none"> • B-alarm: B-alarm Low speed High speed • A-alarm: A-alarm A+B alarm
		 <p>1040 EXTERNAL HIGH</p> <p>Set run-on for external high input:</p> <p>Run-on time: 0 Min.</p>	Set run-on for digital input "External high" <p>For example from a PIR sensor or an extended operation impulse contact.</p>

	 <p>1542 M USER TEMPERATURE</p>		Set temperature control
		 <p>1145 CURRENT OPERATION</p> <p>300.0°C 0.0°C 0.0°C 100.0°C Constant inlet</p>	View actual operating temperatures: <ul style="list-style-type: none"> • Outdoor temperature [°C] • Discharge [°C] • Exhaust [°C] • Inlet [°C] • Actual control type <p> Symbol only displayed when room setpoint panel is installed and configured.</p>
		 <p>1201 TEMP. SETPOINT</p> <p>33.5°C 22.0°C 10.0°C</p> <p>Room controller SW version: 0</p> <p>Sensor correct: 0.0</p>	Set temperature setpoint <ul style="list-style-type: none"> • Max. inlet temperature [°C] • Temperature setpoint [°C] • Min. inlet temperature [°C] <p>Max. and min. are not displayed if constant inlet temp. is selected.</p> <p> : Symbol only displayed when room setpoint panel is installed and configured.</p> <p> : Symbol only displayed when room setpoint panel is Thermokon Modbus.</p> <ul style="list-style-type: none"> • Sensor correktion = set sensoroffset on roomsensor.
		 <p>0909 MIN COOLING INLET</p> <p>16.0°C</p>	Set min. inlet temp. when cooling is active <ul style="list-style-type: none"> • Min. inlet temperature [°C]

		 0910 TEMP. CONTROL Temperature control: Constant inlet		Set temperature control type:
		 0910 SUMMER/WINTER COMP. On		Set summer/winter compensation of temperature setpoint
		 0909 SUMMER COMPENSAT. -5.0°C 20.0°C 30.0°C	Only displayed if sum./wint. comp. is: On	Summer compensation of temp. setpoint
		 0910 WINTER COMPENSAT. 5.0°C -15.0°C 0.0°C	Only displayed if sum./wint. comp. is: On	Winter compensation of temp. setpoint
		 0918 REIRC AIR TEMP. Recirc.function: On 22.0°C 19.0°C	Only displayed if recirculation installed and constant room temp. selected	Set recirculation
		 0919 SUMMER NIGHT COOL Status: Off Start: 23:00 Stop: 06:00		Set summer-night cooling
		 0926 SUMMER NIGHT COOL 12.0°C Stop 23.0°C 20.0°C 30.0°C	Only displayed if summer-night cooling is: On	Set summer-night cooling
		 0911 COOLING RECOVERY On	Only displayed if cooling installed	Set cooling recovery
		 0911 MIN OUT. TEMP. COOL Cool.stop: 18.0°C	Only displayed if cooling installed	Set active cooling stop at low outdoor temp. (allows utilisation of natural cooling)
		 0911 HUMIDITY Humidifying: Inlet Extract Actual: 0.0 % Setpoint: 20.0 % Max: 70.0 % Min: 25.0 %	Is only displayed if humidification is installed	Setting the humidification function
		 1227 DEHUMIDIFICATION Dehumidification: <input checked="" type="checkbox"/> Extractreq.Setpoint: 70.0 %RH Dewpoint coolingpower: 100.0 % Dewpoint temp. (calc.): 15.1 °C Dewpoint temp. (act.): 0.0 °C		Setting the dehumidifying function.
				<ul style="list-style-type: none"> • Dehumidifying: On/Off • Dewpoint cooling power: Set the cooling power by active dehumidifying. • Dewpoint temperature(Calculated)

		Only displayed when HTH-6202 is installed	Readout humidity sensor HTH-6202. <ul style="list-style-type: none"> • Temperature [°C] • Humidity, Absolute [g/kg] • Humidity, relative [%RH]
		Only displayed when HTH-6203 is installed	Readout humidity sensor HTH-6203. <ul style="list-style-type: none"> • Temperature [°C] • Humidity, Absolute [g/kg] • Humidity, relative [%RH]
		Only displayed when HTH-6204 is installed	Readout humidity sensor HTH-6204. <ul style="list-style-type: none"> • Temperature [°C] • Humidity, Absolute [g/kg] • Humidity, relative [%RH]
		Only displayed if temp. control is constant exhaust or room	Set summer/winter change-over Summer: Room temperature Winter: Inlet temperature <ul style="list-style-type: none"> • Summer/winter change-over: <ul style="list-style-type: none"> - Off - Outdoor temperature - Calendar - Summer - Winter
		Only displayed if change-over is: Outdoor temp.	Set outdoor temp. for change-over <ul style="list-style-type: none"> • Summer: at temperature higher than [°C] • Winter: at temperature lower than [°C] No change-over occurs if temp. is within summer/winter limits.
		Only displayed if change-over is: Calendar	Set change-over date <ul style="list-style-type: none"> • Change to summer on specified date. • Change to winter on specified date.

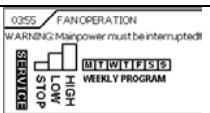
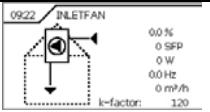
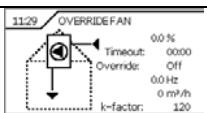
			Start-up adjustment Lock fan speed while ventilation duct VAV dampers are manually adjusted.
			Set time of locked fan speed <ol style="list-style-type: none"> I. Set time: hh:mm <p>Fans are locked at actual speed when time is set to anything other than 00:00. The time counts down automatically. The lock can be deactivated by setting time to 00:00 and waiting max. 60 seconds.</p>

	Set ventilation in case of fire Set fan speed in case of fire alarm, and temperature limits for internal fire alarm in ventilation system.
	Set fire ventilation If the fire alarm is activated, the fans are forced to operate at the set speed. <ul style="list-style-type: none">• Exhaust fan [%]• Inlet fan [%]
	Set temperature limits for internal fire alarm in system <ul style="list-style-type: none">• Temperature in exhaust [°C]• Temperature in inlet [°C]
	Setting for fire damper test <ul style="list-style-type: none">• Weekday for the fire damper test• Time for the fire damper test• Result the latest test• Manual test• Spare time for this test
	Select the position for firedamper in stop Select the position of the firedampers when the unit is in "STOP". Open in "STOP": Yes/No

	Set communication Modbus/RTU settings.
	Set Modbus Set remote communication for Modbus RS485 connection. <ul style="list-style-type: none">• Modbus address [1 - 240]• Baud rate [9600, 19200, 38400]• Parity [None, Even, Odd]• Stop bit [1, 2]
	View LON information <ul style="list-style-type: none">• Neuron ID• Program ID• External interface file• Resource file set

5.1.4 Service instructions

Main menu	Submenu I	Submenu 2	Submenu 3	Description
 				Service level Provides access to system component operating values, settings and override.
				A password must be entered to allow access to underlying menus and installer level. Password: 1 1 1 2

	Fan			
   			Service fans Start, stop or override fans. View actual fan operating status.	
				Setting fan operation Service, manual stop, low or high speed. Automatic operation according to weekly program.
				Inlet fan operating status <ul style="list-style-type: none"> - Actual setpoint [%] Specific fan power SFP [J/m3] - Actual power consumption [W] *I - Actual motor frequency [Hz] *I - Actual ventilation [m3/h] [l/s] [Pa] *I - Actual k-factor for flow calculation <p>The  symbol is displayed if the frequency converter has activated an alarm.</p> <p>*I) Only displayed for OJ frequency converters</p>
				Override inlet fan and set k-factor Override is only possible when the system is running. <ul style="list-style-type: none"> - Set override setpoint [%] - Set remaining override time [mm:ss] - Activate override On / Off - Actual motor frequency [Hz] *I - Actual ventilation [m3/h] [Pa] - Set k-factor <p>The  symbol is displayed if the frequency converter has activated an alarm.</p> <p>*I) Only displayed for OJ frequency converters</p>

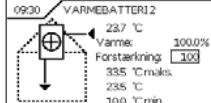
			Exhaust fan operating status <ul style="list-style-type: none"> - Actual setpoint [%] - Specific fan power SFP [J/m3] - Actual power consumption [W] *I - Actual motor frequency [Hz] *I - Actual ventilation [m3/h] [l/s] [Pa] *I - Actual k-factor for flow calculation <p>The symbol is displayed if the frequency converter has activated an alarm.</p> <p>*I) Only displayed for OJ frequency converters</p>
			Override exhaust fan and set k-factor <p>Override is only possible when the system is running.</p> <ul style="list-style-type: none"> - Set override setpoint [%] - Set remaining override time [mm:ss] - Activate override On / Off - Actual motor frequency [Hz] *I - Actual ventilation [m3/h] [l/s] [Pa] - Set k-factor <p>The symbol is displayed if the frequency converter has activated an alarm.</p> <p>*I) Only displayed for OJ frequency converters</p>
			Set delayed fan start <ul style="list-style-type: none"> - Inlet fan delay [s] Starts x seconds after exhaust fan. - Exhaust fan delay [s] Starts y seconds after damper opening.
			Set temperature control <ul style="list-style-type: none"> - P-band cooling [°C] inlet P-band heating [°C] inlet <p>Temperature correction (sensor offset)</p> <ul style="list-style-type: none"> - Actual temperature [°C] - Correction value [°C]
			Set control parameters <ul style="list-style-type: none"> - l-time air quantity [sec.] inlet - l-time cooling [sec.] inlet l-time heat recovery [sec.] inlet - l-time heating1 [sec.] inlet l-time multi-purpose battery [sec.] inlet
			Set control parameters <ul style="list-style-type: none"> - l-time heating2 [sec] inlet

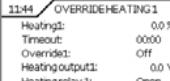
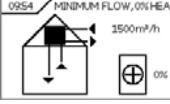
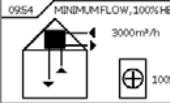
		<p>0923 EXHAUST</p> <p>p-band cooling: 5.0 °C p-band heating: 5.0 °C</p>		Set temperature control <ul style="list-style-type: none"> - P-band cooling [°C] exhaust - P-band heating [°C] exhaust Temperature correction (sensor offset) <ul style="list-style-type: none"> - Actual temperature [°C] - Correction value [°C]
		<p>0923 EXHAUST</p> <p>I-time air volume: 50 Sec. I-time cooling: 1000 Sec. I-time heat recovery: 300 Sec. I-time heating1: 600 Sec. I-time multi-purpose batt.: 600 Sec.</p>		Set control parameters <ul style="list-style-type: none"> - I-time air quantity [sec.] exhaust - I-time cooling [sec.] exhaust - I-time heat recovery [sec.] exhaust - I-time heating1 [sec.] exhaust - I-time multi-purpose battery [sec.] exhaust
		<p>0925 UDSUGNING</p> <p>I-tid varme2: 600 Sek.</p>		Set control parameters <ul style="list-style-type: none"> - I-time heating2 [sec] exhaust

Filter	<p>0902 SERVICE</p> <p>FILTER</p>		Service filters Set filter alarms and view actual pressure.
		<p>0927 INLETFILTER</p>	Set inlet filter alarm limit <ul style="list-style-type: none"> - Set alarm limit [Pa] [%] - Actual alarm limit [Pa] *I - Actual filter pressure [Pa] <p>The symbol is displayed if the filter has activated an alarm.</p>
		<p>0928 EXHAUSTFILTER</p>	Set exhaust filter alarm limit <ul style="list-style-type: none"> - Set alarm limit [Pa] [%] - Actual alarm limit [Pa] *I - Actual filter pressure [Pa] <p>The symbol is displayed if the filter has activated an alarm.</p>

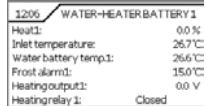
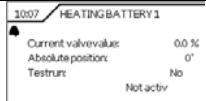
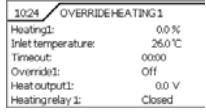
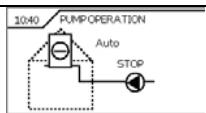
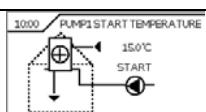
		<table border="1"> <tr><td>1123</td><td>FILTER ALARM</td></tr> <tr><td>Alarm type:</td><td>Static</td></tr> <tr><td>Start filter calibration:</td><td>Yes</td></tr> <tr><td>Status:</td><td>Not calibrated</td></tr> <tr><td>Filter calibration started:</td><td></td></tr> <tr><td>Supply fan:</td><td>0.0 %</td></tr> </table>	1123	FILTER ALARM	Alarm type:	Static	Start filter calibration:	Yes	Status:	Not calibrated	Filter calibration started:		Supply fan:	0.0 %	<p>Set filter alarm type and measurement of filter reference pressure</p> <ul style="list-style-type: none"> - Set alarm type: Static / Dynamic - Start filter measurement: Yes / No - View filter measurement status: <ul style="list-style-type: none"> Filter measurement in progress Filter measurement complete <p>Static: Alarm limit is fixed and is set in Pa.</p> <p>Dynamic: Alarm limit depends on actual flow and is set in % deviation from measured filter reference pressure as a function of flow.</p> <p>Filter measurement: If dynamic alarm type is selected, filter reference pressure must be measured for a clean filter.</p> <p>Filter measurement must be repeated whenever a filter is replaced in connection with service. If Yes is selected, the system automatically measures filter pressure as a function of flow in a sequence that takes approx. 10 minutes. Both filters are measured simultaneously.</p>
1123	FILTER ALARM														
Alarm type:	Static														
Start filter calibration:	Yes														
Status:	Not calibrated														
Filter calibration started:															
Supply fan:	0.0 %														
		<table border="1"> <tr><td>0924</td><td>FILTER ALARM</td></tr> <tr><td>Alarm type:</td><td>Dynamic</td></tr> <tr><td>Start filter calibration:</td><td>No</td></tr> <tr><td>Status:</td><td>Not calibrated</td></tr> <tr><td>Supply fan:</td><td>0.0 %</td></tr> </table>	0924	FILTER ALARM	Alarm type:	Dynamic	Start filter calibration:	No	Status:	Not calibrated	Supply fan:	0.0 %	<p>Only displayed for dynamic alarms</p> <p>Start filter measurement Confirm to start filter measurement or press Esc to cancel.</p>		
0924	FILTER ALARM														
Alarm type:	Dynamic														
Start filter calibration:	No														
Status:	Not calibrated														
Supply fan:	0.0 %														
		<table border="1"> <tr><td>0927</td><td>FILTER ALARM</td></tr> <tr><td>Alarm type:</td><td>Dynamic</td></tr> <tr><td>Start filter calibration:</td><td>Yes</td></tr> <tr><td>Status:</td><td>Not calibrated</td></tr> <tr><td>Filter calibration started:</td><td></td></tr> <tr><td>Supply fan:</td><td>0.0 %</td></tr> </table>	0927	FILTER ALARM	Alarm type:	Dynamic	Start filter calibration:	Yes	Status:	Not calibrated	Filter calibration started:		Supply fan:	0.0 %	<p>Filter measurement status Confirmation that filter measurement is in started/complete.</p>
0927	FILTER ALARM														
Alarm type:	Dynamic														
Start filter calibration:	Yes														
Status:	Not calibrated														
Filter calibration started:															
Supply fan:	0.0 %														

	<p>Heating</p> <table border="1"> <tr><td>0903</td><td>IN SERVICE</td></tr> <tr><td colspan="2">HEATING</td></tr> <tr><td colspan="2"></td></tr> </table>	0903	IN SERVICE	HEATING					<p>Service heating battery View actual heating battery operating status; adjust settings and override.</p>								
0903	IN SERVICE																
HEATING																	
		<table border="1"> <tr><td>0949</td><td>HEATINGBATTERY1</td></tr> <tr><td>0.0 °C</td><td></td></tr> <tr><td>Heating1:</td><td>0.0 %</td></tr> <tr><td>Gain:</td><td>100</td></tr> <tr><td>35.0 °C max.</td><td></td></tr> <tr><td>25.8 °C</td><td></td></tr> <tr><td>10.0 °C min.</td><td></td></tr> </table>	0949	HEATINGBATTERY1	0.0 °C		Heating1:	0.0 %	Gain:	100	35.0 °C max.		25.8 °C		10.0 °C min.		<p>View actual status and set max./min. inlet temperature Heating battery I</p> <ul style="list-style-type: none"> - Actual outdoor temperature [°C] - Actual heating [%] - Set max. inlet temp. [°C] *I - Actual inlet temperature [°C] - Set min. inlet temp. [°C] *I <p>The symbol is displayed if the heating battery has activated an alarm.</p> <p>*I) Not displayed with constant inlet</p>
0949	HEATINGBATTERY1																
0.0 °C																	
Heating1:	0.0 %																
Gain:	100																
35.0 °C max.																	
25.8 °C																	
10.0 °C min.																	

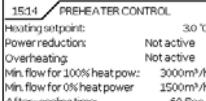
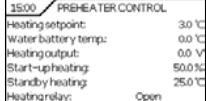
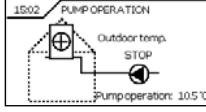
		<p>View actual status and set max./min. inlet temperature</p> <p>Heating battery 2</p> <ul style="list-style-type: none"> - Actual outdoor temperature [°C] - Actual heating [%] - Set max. inlet temp. [°C] *I - Actual inlet temperature [°C] - Set min. inlet temp. [°C] *I <p>The  symbol is displayed if the heating battery has activated an alarm.</p> <p>*I) Not displayed with constant inlet</p>
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	Electric battery		
		Only displayed with electric battery	<p>Set control type for actual electric battery and view actual status</p> <ul style="list-style-type: none"> - Actual heating [%] - Set control type: <ul style="list-style-type: none"> 0-10 V 1-step 2-step Binary - Overheating triggered? - Actual 0-10 V signal on heating output [%] - Actual status heating relay 1: Open/closed - Actual status heating relay 2: Open/closed
		Only displayed with electric battery	<p>Override electric battery</p> <p>Override is only possible when the system is running.</p> <ul style="list-style-type: none"> - Set override setpoint [%] - Set remaining override time [mm:ss] - Activate override On / Off - Actual 0-10 V signal on heating output [%] - Actual status heating relay 1: Open/closed - Actual status heating relay 2: Open/closed
		Only displayed with electric battery	<p>Set min. flow for partial activation of electric heating element</p> <ul style="list-style-type: none"> - Set inlet flow [m³/h] [l/s] "Reduced" is displayed if heating output is reduced due to low flow.
		Only displayed with electric battery	<p>Set min. flow for 100% activation of electric heating element</p> <ul style="list-style-type: none"> - Set inlet flow [m³/h] [l/s]

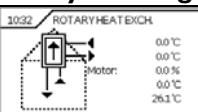
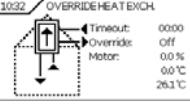
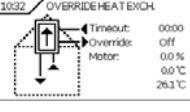
		<table border="1"> <tr><td>15:21</td><td>EL-HEATER BATTERY 2</td></tr> <tr><td>Heat2:</td><td>0.0%</td></tr> <tr><td>Contr.2:</td><td>0-10V</td></tr> <tr><td>Overheating2:</td><td>Low</td></tr> <tr><td>Heat output2:</td><td>0.0 V</td></tr> <tr><td>Heating relay 21:</td><td>Open</td></tr> <tr><td>Heating relay 22:</td><td>Open</td></tr> </table>	15:21	EL-HEATER BATTERY 2	Heat2:	0.0%	Contr.2:	0-10V	Overheating2:	Low	Heat output2:	0.0 V	Heating relay 21:	Open	Heating relay 22:	Open	Only displayed with electric battery 2	<p>Set control type for actual electric battery 2 and view actual status</p> <ul style="list-style-type: none"> - Actual heating [%] - Set control type: 0-10 V 1-step 2-step Binary - Overheating triggered? - Actual 0-10 V signal on heating output [%] - Actual status heating relay 21: Open/closed - Actual status heating relay 22: Open/closed
15:21	EL-HEATER BATTERY 2																	
Heat2:	0.0%																	
Contr.2:	0-10V																	
Overheating2:	Low																	
Heat output2:	0.0 V																	
Heating relay 21:	Open																	
Heating relay 22:	Open																	
		<table border="1"> <tr><td>15:21</td><td>EL-HEATER BATTERY 2</td></tr> <tr><td>Heating relay 21:</td><td>Open</td></tr> <tr><td>Heating relay 22:</td><td>Open</td></tr> <tr><td>Heating relay 23:</td><td>Open</td></tr> <tr><td>Heating relay 24:</td><td>Open</td></tr> <tr><td>Heating relay 25:</td><td>Open</td></tr> <tr><td>Heating relay 26:</td><td>Open</td></tr> </table>	15:21	EL-HEATER BATTERY 2	Heating relay 21:	Open	Heating relay 22:	Open	Heating relay 23:	Open	Heating relay 24:	Open	Heating relay 25:	Open	Heating relay 26:	Open	Only displayed with electric battery 2	<p>Actual status Electric-heating battery 2</p> <ul style="list-style-type: none"> - Actual status heating relay 21: Open/closed - Actual status heating relay 22: Open/closed - Actual status heating relay 23: Open/closed - Actual status heating relay 24: Open/closed - Actual status heating relay 25: Open/closed - Actual status heating relay 26: Open/closed
15:21	EL-HEATER BATTERY 2																	
Heating relay 21:	Open																	
Heating relay 22:	Open																	
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Heating relay 24:	Open																	
Heating relay 25:	Open																	
Heating relay 26:	Open																	
		<table border="1"> <tr><td>15:22</td><td>OVERRIDE HEATING 2</td></tr> <tr><td>Heating2:</td><td>0.0%</td></tr> <tr><td>Timeout2:</td><td>00:00</td></tr> <tr><td>Override2:</td><td>Off</td></tr> <tr><td>Heating output2:</td><td>0.0 V</td></tr> <tr><td>Heating relay 21:</td><td>Open</td></tr> <tr><td>Heating relay 22:</td><td>Open</td></tr> </table>	15:22	OVERRIDE HEATING 2	Heating2:	0.0%	Timeout2:	00:00	Override2:	Off	Heating output2:	0.0 V	Heating relay 21:	Open	Heating relay 22:	Open	Only displayed with electric battery 2	<p>Override electric battery</p> <p>Override is only possible when the system is running.</p> <ul style="list-style-type: none"> - Set override setpoint [%] - Set remaining override time [mm:ss] - Activate override On / Off - Actual 0-10 V signal on heating output [%] - Actual status heating relay 21: Open/closed - Actual status heating relay 22: Open/closed
15:22	OVERRIDE HEATING 2																	
Heating2:	0.0%																	
Timeout2:	00:00																	
Override2:	Off																	
Heating output2:	0.0 V																	
Heating relay 21:	Open																	
Heating relay 22:	Open																	
		<table border="1"> <tr><td>15:23</td><td>MINIMUM FLOW, 0% HEAT 2</td></tr> <tr><td></td><td>1500m³/h</td></tr> <tr><td></td><td>0%</td></tr> </table>	15:23	MINIMUM FLOW, 0% HEAT 2		1500m³/h		0%	Only displayed with electric battery 2	<p>Set min. flow for partial activation of electric heating element</p> <ul style="list-style-type: none"> - Set inlet flow [m³/h] [l/s] - "Reduced" is displayed if heating output is reduced due to low flow. 								
15:23	MINIMUM FLOW, 0% HEAT 2																	
	1500m³/h																	
	0%																	
		<table border="1"> <tr><td>15:24</td><td>MINIMUM FLOW, 100% HEAT 2</td></tr> <tr><td></td><td>3000m³/h</td></tr> <tr><td></td><td>100%</td></tr> </table>	15:24	MINIMUM FLOW, 100% HEAT 2		3000m³/h		100%	Only displayed with electric battery 2	<p>Set min. flow for 100% activation of electric heating element</p> <ul style="list-style-type: none"> - Set inlet flow [m³/h] [l/s] 								
15:24	MINIMUM FLOW, 100% HEAT 2																	
	3000m³/h																	
	100%																	
		<table border="1"> <tr><td>09:53</td><td>AFTER-COOL</td></tr> <tr><td></td><td>60Sec.</td></tr> <tr><td></td><td>STOP</td></tr> </table>	09:53	AFTER-COOL		60Sec.		STOP	Only displayed with electric battery	<p>Set after-cooling time for electric battery</p> <ul style="list-style-type: none"> - Set time [s] <p>On stopping, the inlet fan continues to run for the after-cooling time.</p>								
09:53	AFTER-COOL																	
	60Sec.																	
	STOP																	

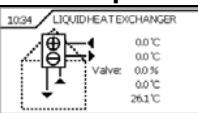
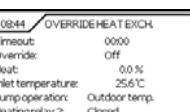
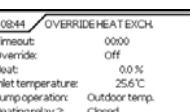
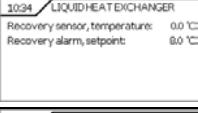
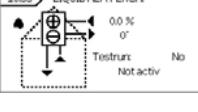
Water battery			
		Only displayed with water battery I	View actual water battery status and set frost alarm <ul style="list-style-type: none"> - Actual heating [%] - Actual inlet temp. [°C] - Actual water temp. [°C] - Set frost alarm limit [°C] - Overheating triggered? - Actual 0-10 V signal on heating output [%] - Actual status heating relay I: Open/closed
		Only displayed with Quic Plug Modbus Actuator	Water battery, Modbus <p>Actual valve position [%] Absolute position [Feed back] Testrun [Yes] / [No] Communication [Active] / [Not active]</p>
		Only displayed with water battery I	Override water battery and set frost alarm <p>Override is only possible when the system is running.</p> <ul style="list-style-type: none"> - Set override setpoint [%] - Actual inlet temp. [°C] - Set remaining override time [mm:ss] - Activate override On / Off - Actual 0-10 V signal on heating output [%] - Actual status heating relay I: Open/closed
		Only displayed with water battery I	Set pump operation I <ul style="list-style-type: none"> - Set pump operation to: Constant operation Controlled by outdoor temperature Controlled by heating demand (Auto) - "Start" is displayed when the pump is operating
		Only displayed with water battery and outdoor temp. control	Set pump start temperature <ul style="list-style-type: none"> - Pump starts when outdoor temperature is lower than the set value [°C] - "Start" is displayed when the pump is operating
		Only displayed with water battery I	Set water battery I frost protection <ul style="list-style-type: none"> - Set temp. for full frost protection [°C] - Set temp. for frost alarm [°C] - Set frost protection P-band [°C] - Set heating boost on start up [%] - Set water battery temp. in standby [°C] - Actual water temp. [°C]
		Only displayed with water battery 2	View actual water battery 2 status and set frost alarm <ul style="list-style-type: none"> - Actual heating [%] - Actual inlet temp. [°C] - Actual water temp. [°C] - Set frost alarm limit [°C] - Overheating triggered? - Actual 0-10 V signal on heating 2 output [%] - Actual status heating relay 21: Open/closed

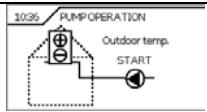
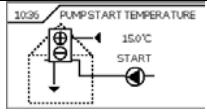
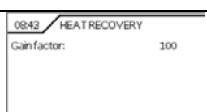
		<p>1039 / VARMEBATTERI2</p> <ul style="list-style-type: none"> Aktuel vandtælling: 0.0 % Absolut position: 0° Testføx: Nej Ideaktiv 	Only displayed with Quic Plug Modbus Actuator	Water battery 2, Modbus Actual valve position [%] Absolute position [Feed back] Testrun [Yes] / [No] Communication [Active] / [Not active]
		<p>1040 / TVANGSSTYR VARME2</p> <ul style="list-style-type: none"> Varme2: 0.0 % Indblandingstemperatur: 23.5 °C Timeout: 00:00 TVangsstyring2: Fra Varmeudgang2: 10.0 V Varmerelay 21: Sluttet 	Only displayed with water battery 2	Override water battery 2 and set frost alarm Override is only possible when the system is running. <ul style="list-style-type: none"> - Set override setpoint water battery 2 [%] - Actual inlet temp. [°C] - Set remaining override time [mm:ss] - Activate override On / Off - Actual 0-10 V signal on heating output [%] - Actual status heating relay 21: Open/closed
		<p>1042 / PUMPE2DRIFT</p> <ul style="list-style-type: none"> Auto START Ventil: 0-10V 	Only displayed with water battery 2	Set pump operation 2 <ul style="list-style-type: none"> - Set pump operation to: Constant operation Controlled by outdoor temperature Controlled by heating demand (Auto) - "Start" is displayed when the pump is operating
		<p>1043 / PUMPE2 START TEMPERATUR</p> <ul style="list-style-type: none"> 15.0 °C START 	Only displayed with water battery 2 and outdoor controlled pump	Set pump 2 start temperature <ul style="list-style-type: none"> - Pump 2 starts when outdoor temperature is lower than the set value [°C] - "Start" is displayed when the pump 2 is operating
		<p>1045 / FROST BESKYTTELSE2</p> <ul style="list-style-type: none"> Frost beskyttelse2: 5.0 °C Frost skål2: 2.0 t. Frost P-bånd2: 5.0 °C Opstart varme2: 500% Standby varme2: 25.0 °C Vandtemperatur2: 0.0 °C 	Only displayed with water battery 2	Set water battery 2 frost protection <ul style="list-style-type: none"> - Set temp. for full frost protection [°C] - Set temp. for frost alarm [°C] - Set frost protection P-band [°C] - Set heating boost on start up [%] - Set water battery temp. in standby [°C] - Actual water temp. [°C]

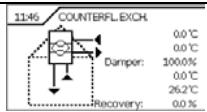
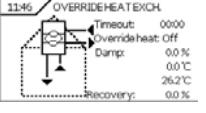
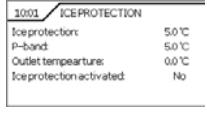
	Preheater			
				Service preheater Readouts and status parameters of the preheater. Settings and manual operation.
			Only displayed when preheater is installed	Setpoint preheater - Actual outdoor temperature. [°C] - Actual output [V] - Setpoint [°C] - Actual temperature after preheater [°C]
			Only displayed when preheater is installed	Override preheater and set frost alarm Override is only possible when the system is running. - Set override setpoint water preheater [%] - Set remaining override time [mm:ss] - Activate override On / Off - Actual 0-10 V signal on heating output [%] - Actual status heating relay 21: Open/closed
			Only displayed when electric preheater is installed	Set preheater controller for electric battery - Preheater setpoint - Power reduction [Active/Not active] - Overheating [Active/Not active] - Min flow 100% heating [m³/h] - Min flow 0% heating [m³/h] - After cooling time [sec]
			Only displayed when water based preheater is installed	Set preheater controller for water battery - Preheater setpoint - Actual returntemp. Water [°C] - Actual heating output [V] - Startup valve opening [%] - Standby heating [°C] - Relay for circ. pump [open/closed]
			Only displayed when water based preheater is installed	Preheater frostprotection - Frostprotection, controlling temperature [°C] - Min. temp. / Frostprotection [°C] - P-band for anti-frost regulation [°C]
			Only displayed when water based preheater is installed	Set pump operation preheater - Set pump operation to: Constant operation Controlled by outdoor temperature Controlled by heating demand (Auto) - "Start" is displayed when the pump is operating. Set pump preheater start temperature. - Pump 2 starts when outdoor temperature is lower than the set value [°C]

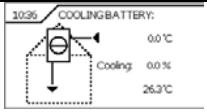
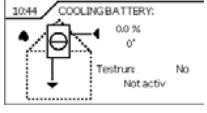
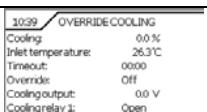
	Heat recovery		
	 HEATING RECOVERY		Service heat recovery View actual heat recovery operating status; adjust settings and override.
	Cross-flow exchanger		
	 1001 CROSS-FL. HEAT EXCH. Dampen: 100.0% 0.0°C 0.0°C 26.0°C Recovery: 0.0 %	Only displayed with cross-flow exchanger	View actual heat recovery status <ul style="list-style-type: none"> - Actual outdoor temperature [°C] - Actual discharge temperature [°C] - Actual 0-10 V signal on heat recovery output [V] - Actual exhaust temperature [°C] - Actual inlet temperature [°C] - Actual heat recovery [%]
	 b1146 OVERRIDEHEATEXCH. Timeout: 00:00 Overrideheat: off Damp: 0.0% 0.0°C 0.0°C Recovery: 0.0 %	Only displayed with cross-flow exchanger	Override cross-flow exchanger Override is only possible when the system is running. <ul style="list-style-type: none"> - Set remaining override time [mm:ss] - Activate override On / Off - Set override setpoint [%] - Actual exhaust temp. [°C] - Actual inlet temp. [°C] - Actual heat recovery [%]
	 1145 CROSS-FL. HEAT EXCH. 0.0 % 0° Testrun: No Not activ	Only displayed with Quic Plug Modbus Damper	Bypass damper, Modbus Actual valve position [%] Absolut position [Feed back] Testrun [Yes] / [No] Communication [Active] / [Not active]
	 1001 ICEPROTECTION Iceprotection: 5.0 °C P-band: 5.0 °C Outlettemperature: 0.0 °C Iceprotection activated: No	Only displayed with cross-flow exchanger	Set ice protection of cross-flow exchanger <ul style="list-style-type: none"> - Set ice protection temp. [°C] - Set ice protection P-band [°C] - Actual discharge temperature [°C] - Ice protection running: Yes / No
	 0842 HEATRECOVERY Gainfactor: 100	Only displayed with cross-flow exchanger	Gain factor Set the gain factor

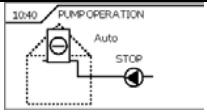
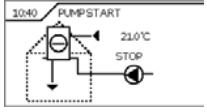
	Rotary exchanger		
	 <p>0.0 °C 0.0 °C 0.0 % 0.0 °C 26.1 °C Motor:</p>	Only displayed with rotary exchanger	
	<p>1032 ROTARYHEATEXCH.</p>  <p>0.00: Off Override: 0.0 % Motor: 0.0 °C 26.1 °C</p>	View actual heat recovery status <ul style="list-style-type: none"> - Actual outdoor temperature [°C] - Actual discharge temperature [°C] - Actual 0-10 V signal on heat recovery output [V] - Actual exhaust temperature [°C] - Actual inlet temperature [°C] 	
	<p>Only displayed with rotary exchanger</p>  <p>0.00: Off Override: 0.0 % Motor: 0.0 °C 26.1 °C</p>	Override rotary exchanger Override is only possible when the system is running. <ul style="list-style-type: none"> - Set remaining override time [mm:ss] - Activate override On / Off - Set override setpoint [%] - Actual exhaust temp. [°C] - Actual inlet temp. [°C] 	
	 <p>Actual recovery: 0 % Controller type: Motor revolutions: 0 RPM Motor current: 0 mA Holding torque: 0.0 % Software version: 0.00</p>	Only displayed with RHX2M	View actual RHX2M status <ul style="list-style-type: none"> - Actual recovery [%] - Actual controller type: RH2M-1212/1412/1612 - Actual motor speed [RPM] - Actual motor current [mA] - Actual holding torque [%] - Actual software version in RHX2M
	 <p>0843 HEAT RECOVERY Gain factor: 100</p>	Only displayed with rotary heat exchanger	Gain factor Set the gain factor

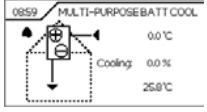
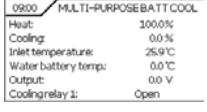
	Fluid-coupled exchanger		
	 <p>0.0 °C 0.0 °C 0.0 % 0.0 °C 26.1 °C Valve:</p>	Only displayed with fluid-coupled exchanger	
	<p>1034 LIQUIDHEATEXCH.</p>  <p>0.00: Off Override: 0.0 % Heat: 0.0 % Inlet temperature: 25.6 °C Pump operation: Outdoor temp. Heating relay 2: Closed</p>	View actual heat recovery status <ul style="list-style-type: none"> - Actual outdoor temperature [°C] - Actual discharge temperature [°C] - Actual recovery signal to valve [%] - Actual exhaust temperature [°C] - Actual inlet temperature [°C] 	
	<p>Only displayed with fluid-coupled exchanger</p>  <p>0.00: Off Override: 0.0 % Heat: 0.0 % Inlet temperature: 25.6 °C Pump operation: Outdoor temp. Heating relay 2: Closed</p>	Override fluid-coupled exchanger Override is only possible when the system is running. <ul style="list-style-type: none"> - Set remaining override time [mm:ss] - Activate override On / Off - Set override setpoint [%] - Actual inlet temp. [°C] - Actual pump operation type - Actual status heating relay 2: Open/closed 	
	 <p>1034 LIQUIDHEATEXCH. Recovery sensor, temperature: 0.0 °C Recovery alarm, setpoint: 0.0 °C</p>	Only displayed with fluid-coupled exchanger	Temperatur, alarm <ul style="list-style-type: none"> • Exchanger, sensor temperature • Exchanger alarm, setpoint
	 <p>0.0 % 0 ° Testrun: No activ</p>		Liq. heat exch. valve, Modbus Actual valve position [%] Absolut position [Feedback] Test run [Yes] / [No]

			Only displayed with fluid-coupled exchanger	Set pump operation <ul style="list-style-type: none">- Set pump operation to:<ul style="list-style-type: none">Constant operationControlled by outdoor temperatureControlled by heating demand (Auto)- "Start" is displayed when the pump is operating
			Only displayed with fluid-coupled exchanger and outdoor temp. control	Set pump start temperature <ul style="list-style-type: none">- Pump starts when outdoor temperature is lower than the set value [°C]- "Start" is displayed when the pump is operating
			Only displayed with fluid-coupled exchanger	Gain factor Set the gain factor

		Counter flow exchanger		
			Is only displayed if a counter-flow exchanger is configured	View actual heat recovery status <ul style="list-style-type: none">- Actual outdoor temperature [°C]- Actual discharge temperature [°C]- Actual 0-10 V signal on heat recovery output [V]- Actual exhaust temperature [°C]- Actual inlet temperature [°C]- Actual heat recovery [%]
			Is only displayed if a counter-flow exchanger is configured	Override cross-flow heat exchanger <ul style="list-style-type: none">- Override is only possible when the system is running- Set remaining override time [mm:ss]- Activate override On / Off- Set override setpoint [%]- Actual exhaust temp. [°C]- Actual inlet temp. [°C]- Actual heat recovery [%]
			Is only displayed if a counter-flow exchanger is configured	Set ice protection of counter-flow exchanger <ul style="list-style-type: none">- Set ice protection temp. [°C]- Set ice protection P-band [°C]- Actual discharge temperature [°C]- Ice protection active: Yes / No
			Only displayed with counter flow exchanger	Gain factor Set the gain factor

Cooling			
0903 SERVICE 		Only displayed with cooling battery	Service cooling battery View actual cooling battery operating status; adjust settings and override.
		Only displayed with cooling battery	View actual cooling status <ul style="list-style-type: none">- Actual outdoor temperature [°C]- Actual cooling [%]- Actual inlet temperature [°C]
		Only displayed with Quick Plug Modbus valve	Water cooling valve, Modbus Actual valve position [%] Absolut position [Feedback] Test run [Yes] / [No] Communication [Active] / [Not active]
		Only displayed with cooling battery	Override cooling battery Override is only possible when the system is running. <ul style="list-style-type: none">- Set override setpoint [%]- Actual inlet temp. [°C]- Set remaining override time [mm:ss]- Activate override On / Off- Actual 0-10 V signal on cooling output [%]- Actual status cooling relay 1: Open/closed

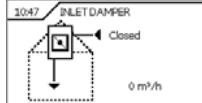
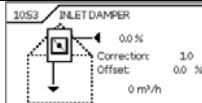
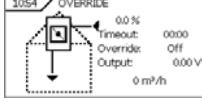
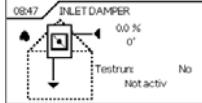
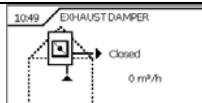
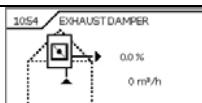
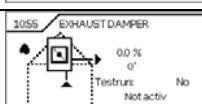
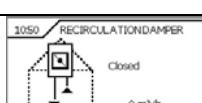
	Water cooling		
		Only displayed with water cooling	Set pump operation <ul style="list-style-type: none">- Set pump operation to: Constant operation Controlled by outdoor temperature Controlled by cooling demand (Auto)- "Start" is displayed when the pump is operating
		Only displayed with water cooling and outdoor temp. control	Set pump start temperature <ul style="list-style-type: none">- Pump starts when outdoor temperature is higher than the set value [°C]- "Start" is displayed when the pump is operating

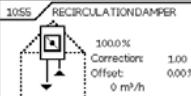
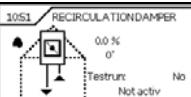
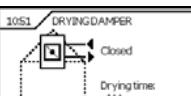
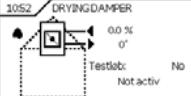
	Combined heating-/cooling battery		
		Only displayed with combined heating- / cooling battery	Combined battery, cooling mode <ul style="list-style-type: none">• Actual outdoor temperature [°C]• Actual cooling signal [%]• Actual inlet temperature [°C]
		Only displayed with combined heating- / cooling battery	Combined battery, cooling <ul style="list-style-type: none">• Actual heating signal [%]• Actual cooling signal [%]• Actual inlet temperature.• Actual return temperature• Actual signal to the valve [V]• Cooling relay = actual pump status

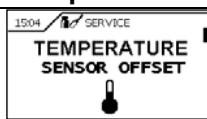
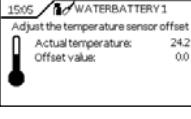
		<p>Only displayed with combined heating- / cooling battery</p>	<table border="1"> <tr><td>0900</td><td>OVERRIDE MULTI-PUR BATT</td></tr> <tr><td>Heating:</td><td>0.0 %</td></tr> <tr><td>Cooling:</td><td>0.0 %</td></tr> <tr><td>Inlet temperature:</td><td>25.9 °C</td></tr> <tr><td>Timeout:</td><td>00:00</td></tr> <tr><td>Override:</td><td>Off</td></tr> <tr><td>Output:</td><td>0.0 V</td></tr> </table>	0900	OVERRIDE MULTI-PUR BATT	Heating:	0.0 %	Cooling:	0.0 %	Inlet temperature:	25.9 °C	Timeout:	00:00	Override:	Off	Output:	0.0 V	<p>Override combined battery</p> <ul style="list-style-type: none"> Actual heating signal [%] Actual cooling signal [%] Actual inlet temperature. Set remaining override time [mm:ss] Aktiver tvangsstyring On/Off Actual signal to the valve [V]
0900	OVERRIDE MULTI-PUR BATT																	
Heating:	0.0 %																	
Cooling:	0.0 %																	
Inlet temperature:	25.9 °C																	
Timeout:	00:00																	
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		<table border="1"> <tr><td>0900</td><td>FROST PROTECT M-PBATT</td></tr> <tr><td>Cool frost protection:</td><td>20 °C</td></tr> <tr><td>Frost P-band:</td><td>50 °C</td></tr> <tr><td>Standby heat:</td><td>25.0 °C</td></tr> <tr><td>Water temperature:</td><td>0.0 °C</td></tr> </table>	0900	FROST PROTECT M-PBATT	Cool frost protection:	20 °C	Frost P-band:	50 °C	Standby heat:	25.0 °C	Water temperature:	0.0 °C	<p>Only displayed with combined heating- / cooling battery</p>	<p>Set water battery frost protection</p> <ul style="list-style-type: none"> Set temp. for full frost protection [°C] Set temp. for frost alarm [°C] Set frost protection P-band [°C] Set water battery temp. in st.by [°C] Actual water temp. [°C] 				
0900	FROST PROTECT M-PBATT																	
Cool frost protection:	20 °C																	
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		DX cooling													
		<table border="1"> <tr><td>1041</td><td>DX COOLING 1</td></tr> <tr><td>Control:</td><td>2-step</td></tr> <tr><td>Cooling error:</td><td>No</td></tr> <tr><td>Cooling output:</td><td>0.0 V</td></tr> <tr><td>Minimum airflow:</td><td>1500m³/h</td></tr> <tr><td>After-cooling time:</td><td>60 Sec.</td></tr> </table>	1041	DX COOLING 1	Control:	2-step	Cooling error:	No	Cooling output:	0.0 V	Minimum airflow:	1500m³/h	After-cooling time:	60 Sec.	<p>Only displayed with DX cooling</p> <p>Set control type for actual DX cooling and view actual status</p> <ul style="list-style-type: none"> Set control type: <ul style="list-style-type: none"> 2-step 3-step binary 4-step 15-step binary Actual cooling fault: Yes/No Actual 0-10 V signal on cooling out [%] Set min. air volume for cooling [m³/h] Set condenser after-cooling time [s]
1041	DX COOLING 1														
Control:	2-step														
Cooling error:	No														
Cooling output:	0.0 V														
Minimum airflow:	1500m³/h														
After-cooling time:	60 Sec.														
		<table border="1"> <tr><td>1041</td><td>DX COOLING 2</td></tr> <tr><td>Cooling relay 1:</td><td>Open</td></tr> <tr><td>Cooling relay 2:</td><td>Open</td></tr> <tr><td>Cooling relay 3:</td><td>Open</td></tr> <tr><td>Cooling relay 4:</td><td>Open</td></tr> </table>	1041	DX COOLING 2	Cooling relay 1:	Open	Cooling relay 2:	Open	Cooling relay 3:	Open	Cooling relay 4:	Open	<p>Only displayed with DX cooling</p> <p>View actual status of cooling relays</p> <ul style="list-style-type: none"> Act. status cooling relay1: Open/closed Act. status cooling relay2: Open/closed Act. status cooling relay3: Open/closed Act. status cooling relay4: Open/closed 		
1041	DX COOLING 2														
Cooling relay 1:	Open														
Cooling relay 2:	Open														
Cooling relay 3:	Open														
Cooling relay 4:	Open														
		<table border="1"> <tr><td>1042</td><td>DX COOLING 3</td></tr> <tr><td>Low pressure circuit 1:</td><td>0.0 Bar</td></tr> <tr><td>High pressure circuit 1:</td><td>0.0 Bar</td></tr> <tr><td>Low pressure circuit 2:</td><td>0.0 Bar</td></tr> <tr><td>High pressure circuit 2:</td><td>0.0 Bar</td></tr> </table>	1042	DX COOLING 3	Low pressure circuit 1:	0.0 Bar	High pressure circuit 1:	0.0 Bar	Low pressure circuit 2:	0.0 Bar	High pressure circuit 2:	0.0 Bar	<p>Only displayed with DX cooling</p> <p>View actual status of cooling circuits</p> <ul style="list-style-type: none"> Actual status low-press circuit 1 [bar] Actual status high-press circuit 1 [bar] Actual status low-press circuit 2 [bar] Actual status high-press circuit 2 [bar] 		
1042	DX COOLING 3														
Low pressure circuit 1:	0.0 Bar														
High pressure circuit 1:	0.0 Bar														
Low pressure circuit 2:	0.0 Bar														
High pressure circuit 2:	0.0 Bar														
		<table border="1"> <tr><td>1042</td><td>DX COOLING 4</td></tr> <tr><td>Low pressure alarm 1:</td><td>3.0 Bar</td></tr> <tr><td>High pressure alarm 1:</td><td>15.0 Bar</td></tr> <tr><td>Low pressure alarm 2:</td><td>3.0 Bar</td></tr> <tr><td>High pressure alarm 2:</td><td>15.0 Bar</td></tr> </table>	1042	DX COOLING 4	Low pressure alarm 1:	3.0 Bar	High pressure alarm 1:	15.0 Bar	Low pressure alarm 2:	3.0 Bar	High pressure alarm 2:	15.0 Bar	<p>Only displayed with DX cooling</p> <p>View actual status of pressure alarms</p> <ul style="list-style-type: none"> Actual status low-press alarm 1 [bar] Actual status high-press alarm 1 [bar] Actual status low-press alarm 2 [bar] Actual status high-press alarm 2 [bar] 		
1042	DX COOLING 4														
Low pressure alarm 1:	3.0 Bar														
High pressure alarm 1:	15.0 Bar														
Low pressure alarm 2:	3.0 Bar														
High pressure alarm 2:	15.0 Bar														
		<table border="1"> <tr><td>1042</td><td>DX COOLING 5:</td></tr> <tr><td>Cooling fault compr.1:</td><td>No</td></tr> <tr><td>Cooling fault compr.2:</td><td>No</td></tr> <tr><td>Cooling fault compr.3:</td><td>No</td></tr> <tr><td>Cooling fault compr.4:</td><td>No</td></tr> </table>	1042	DX COOLING 5:	Cooling fault compr.1:	No	Cooling fault compr.2:	No	Cooling fault compr.3:	No	Cooling fault compr.4:	No	<p>Only displayed with DX cooling</p> <p>View actual status of cooling compressors</p> <ul style="list-style-type: none"> Actual cooling fault compress 1: Y/N Actual cooling fault compress 2: Y/N Actual cooling fault compress 3: Y/N Actual cooling fault compress 4: Y/N 		
1042	DX COOLING 5:														
Cooling fault compr.1:	No														
Cooling fault compr.2:	No														
Cooling fault compr.3:	No														
Cooling fault compr.4:	No														
		<table border="1"> <tr><td>1042</td><td>DX COOLING 6</td></tr> <tr><td>Min. cooling timer:</td><td>0 Sec.</td></tr> <tr><td>Cooling time relay 1:</td><td>0 Sec.</td></tr> <tr><td>Cooling time relay 2:</td><td>0 Sec.</td></tr> <tr><td>Cooling time relay 3:</td><td>0 Sec.</td></tr> <tr><td>Cooling time relay 4:</td><td>0 Sec.</td></tr> </table>	1042	DX COOLING 6	Min. cooling timer:	0 Sec.	Cooling time relay 1:	0 Sec.	Cooling time relay 2:	0 Sec.	Cooling time relay 3:	0 Sec.	Cooling time relay 4:	0 Sec.	<p>Only displayed with DX cooling</p> <p>View and set cooling relay cut-in times</p> <ul style="list-style-type: none"> Set min. cooling time [s] Actual cooling time relay 1 [s] Actual cooling time relay 2 [s] Actual cooling time relay 3 [s] Actual cooling time relay 4 [s]
1042	DX COOLING 6														
Min. cooling timer:	0 Sec.														
Cooling time relay 1:	0 Sec.														
Cooling time relay 2:	0 Sec.														
Cooling time relay 3:	0 Sec.														
Cooling time relay 4:	0 Sec.														

		Only displayed with DX cooling	View and set cooling relay restart times - Set max. no. of restarts/hour [gg] - Actual no. of restarts relay 1 [gg] - Actual no. of restarts relay 2 [gg] - Actual no. of restarts relay 3 [gg] - Actual no. of restarts relay 4 [gg]
		Only displayed with DX cooling	Set and view stoptime on cool.relays - Set min. stoptime [sec] - Actual stoptime relay 1 [sec.] - Actual stoptime relay 2 [sec.] - Actual stoptime relay 3 [sec.] - Actual stoptime relay 4 [sec.]

	Dampers		
			Service dampers View actual damper position.
		Only displayed if on/off dampers	Inlet damper status - Actual damper position: Open/closed - Actual inlet air [m³/h] [l/s]
		Only displayed if modulated dampers [0-10V] or Quick Plug Modbus	Inlet damper status - Actual damper position: [%] - Set correction factor - Set offset on control signal - Actual inlet air [m³/h] [l/s]
	Only displayed if modulated dampers [0-10V]		Override inlet damper Override is only possible when the system is running. - Set override setpoint [%] - Set remaining override time [mm:ss] - Activate override On / Off - Actual 0-10 V signal on damper [V] - Actual inlet air [m³/h] [l/s]
		Only displayed with Quick Plug Modbus damper	Inlet damper, Modbus Actual valve position [%] Absolut position [Feedback] Test run [Yes] / [No] Communication [Active] / [Not active]
		Only displayed if on/off dampers	Exhaust damper status - Actual damper position: Open/closed - Actual exhaust air [m³/h] [l/s]
		Only displayed if modulated dampers	Exhaust damper status - Actual damper position: [%] - Actual exhaust air [m³/h] [l/s]
		Only displayed with Quick Plug Modbus damper	Exhaust damper, Modbus Actual valve position [%] Absolut position [Feedback] Test run [Yes] / [No] Communication [Active] / [Not active]
		Only displayed if on/off recirculation damper installed	Recirculation damper status - Actual damper position: Open/closed - Actual inlet air [m³/h] [l/s]

		Only displayed if modulated dampers [0-10V] or Quick Plug Modbus	Recirculation damper status - Actual damper position: [%] - Set correction factor - Set offset on control signal - Actual inlet air [m³/h] [l/s]
		Only displayed with Quick Plug Modbus damper	Recirculation damper, Modbus Actual valve position [%] Absolut position [Feedback] Test run [Yes] / [No] Communication [Active] / [Not active]
		Only displayed if drying damper installed	Drying damper Drying damper [Open] / [Closed] Set drying time [Sec.]
		Only displayed with Quick Plug Modbus damper	Drying damper, Modbus Actual valve position [%] Absolut position [Feedback] Test run [Yes] / [No] Communication [Active] / [Not active]
		Only displayed if modulated dampers are installed	Set I-time for modulated recirculation - Set I-time temperature
		Only displayed if modulated dampers are installed	Gain factor - Set the gain factor

Temperature Sensor offset			
			Settings for sensorcorrection Correction for cable resistance and sensor tolerances.
			Sensor correction Heatingbattery 1 – Water – Return sensor Set sensor offset [+/-3,5°C] - Actual sensor, displayed value [°C] - Set the sensor correction factor [°C]

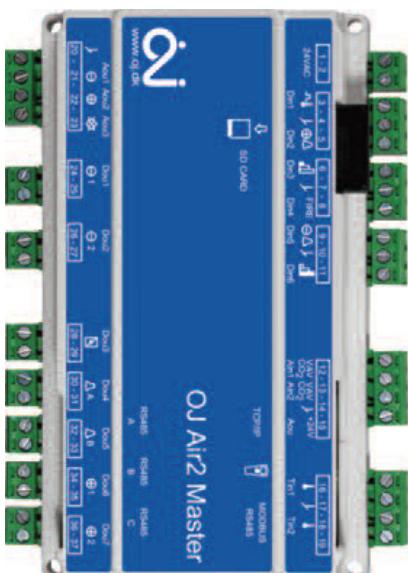
Pressure transmitters			
			Service pressure transducers 0-calibration of all ventilation system pressure transducers.
			Select 0-calibration type - Set 0-calibration: Manual/Auto If Auto is selected, 0-calibration is automatically performed every time the system stops.
			Start 0-calibration Confirm to start 0-calibration or press Esc to cancel. The system is stopped for approx. 5 minutes while 0-calibration is performed.
			0-calibration status Confirmation that 0-calibration is in progress/complete.

Humidifier			
		Only displayed if humidifier is installed	Humidity readout actual status for humidifier, setpoints and overriding.
		Only displayed if humidifier is installed	Humidifier status - Humidifier control, set: [No/Inlet/Exhaust] - Humidity (Actual value) [%rh] - Humidity (Setpoint) [%rh]
			Override humidifier - Override is only possible when the system is running - Activate override On / Off - Set override setpoint [%] - Set remaining override time [mm:ss] - Actual output from controller [%] - Actual output from controller [V] - P-band setting [%rh] - I-time setting [sec.]
			Max. humidity - Max. humidity [%rh]
			Humidity sensor, HTH-6202 - SW vers. - Actual measured value [%rh] - Actual measured value [°C]
			Humidity sensor, HTH-6203 - SW vers. - Actual measured value [%rh] - Actual measured value [°C]
			Humidity sensor, HTH-6204 - SW vers. - Actual measured value [%rh] Actual measured value [°C]

5.2 Operation with a computer



The unit can be operated with a PC or laptop. Connect the PC or laptop through a LAN cable with the master in the junction box.



The LAN connection TCP/IP can be found on the top of the master.

Also connect the hand terminal with the connection wire in the junction box to the unit. Then put the isolation switch “**ON**”.

Leave the inspection door open (watch out for the turning parts of the fan!).

Start Internet Explorer and enter the following IP Address: **192.168.1.100**

The next screen will be shown: (image 3).

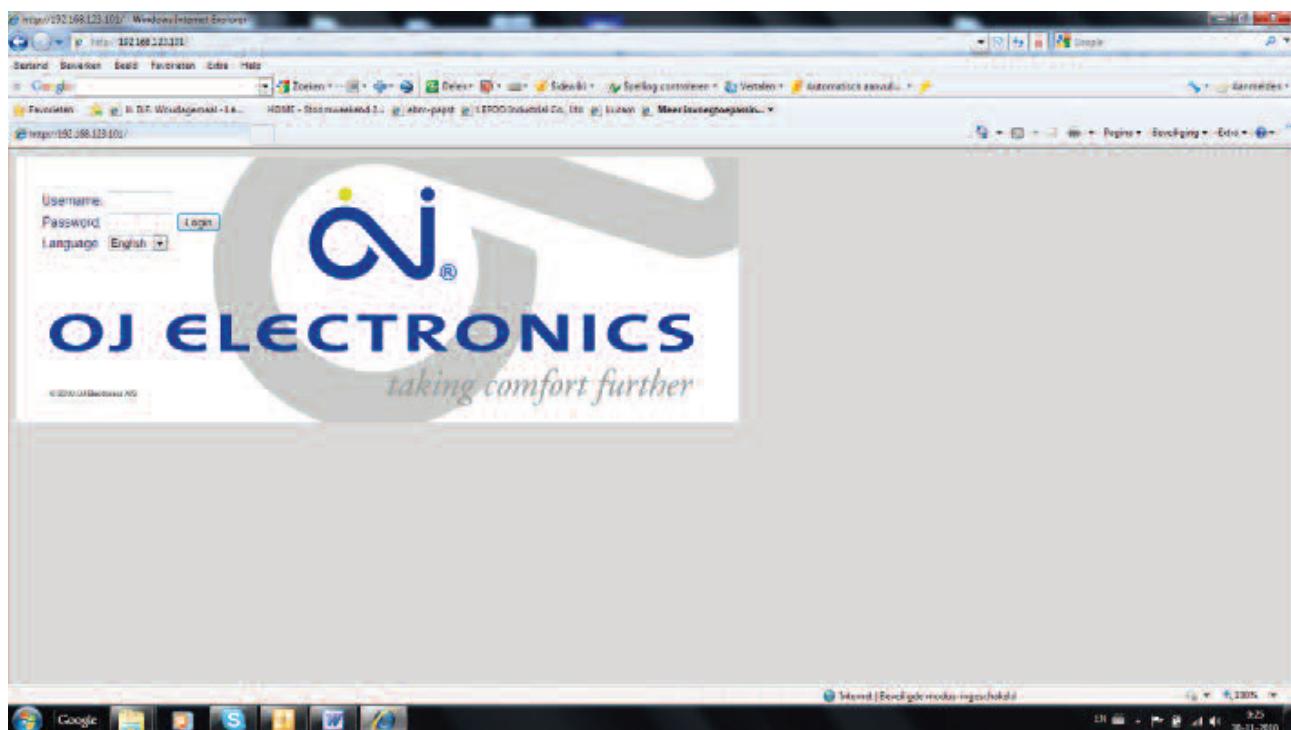


Image 3

Enter the user name: USER

Enter the password: 111

For installer level, enter the user na: INSTALLE

Enter the password: 222

The next screen will be shown: (image 4).

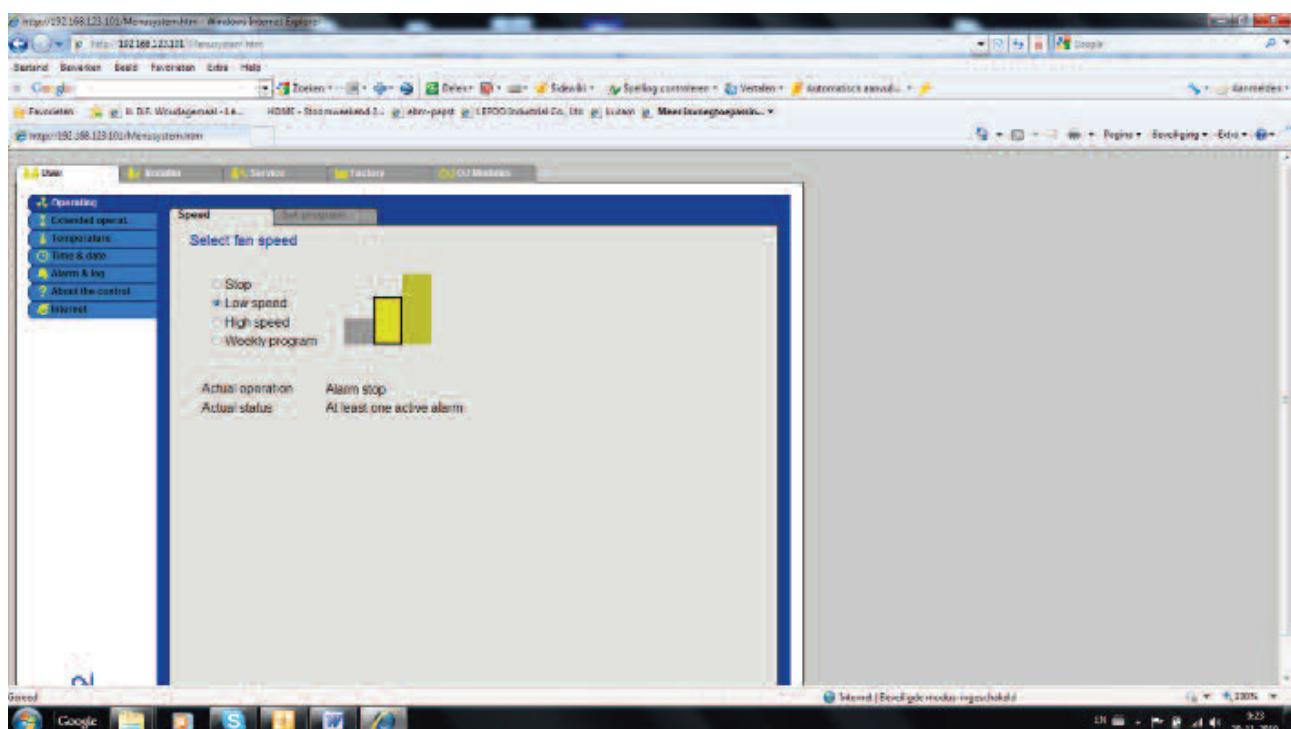


Image 4

Through the tabs on the top side and left side of the screen the actual status of the unit can then be seen and possible changes can be modified. This depends on the factory installed levels. The menu structure is in general the same as the above-mentioned instructions of the hand terminal. For modifications and/or reading out actual values with pc or laptop the same instructions can be used.

6 Maintenance

6.1 Filters

The filters need to be periodically checked on pollution. We advise to do this twice a year, depending on the pollution on site. Change the filters when they are seriously polluted. Under normal circumstances this will be every six months. The unit can never be used without filters. Next to clearing the supplied air, the filters also have the task to protect the components in the unit. This guarantees a long durability of the unit en saves costs for maintenance.

6.2 Heat exchanger

During the inspection of the filters the aluminium counterflow heat exchanger also needs to be checked for pollution. Severe pollution can occur because of filters that are not replaced on time or used at all. This can lead to a decrease of the capacity and an increase of the energy consumption. In case the heat exchanger is badly polluted, the service department of Mark BV needs to be contacted immediately.

6.3 Inspection doors

The inspection doors are provided with plastic hinges (image 5). The hinges also serve as closure. Before opening and closing of the doors, the hinges always need to be opened on an angle of 90 degrees. By using the handle the door will then be opened or closed (image 5).

As hinges can be locked with a key, a hatch can be made from each door. The hinges and door rubbers need to be treated with Vaseline or silicone spray on a regular basis. This will keep the doors easily accessible and the seals flexible.



Image 5

6.4 Cooling system

The cooling system must be maintained in accordance with the logbook. The logbook can be found on the inside of the inspection door of the cooling section.

6.5 Spare parts

For spare parts you can contact our service department.

7 Safety

The installation of the Mark Airstream unit needs to be performed according to the general en local building codes, safety instructions and municipal installation instructions, electrical company and waterworks. The unit may only be operated when all ducts are connected and inspection doors are locked. This way the contact with moving parts is prevented. The unit is supplied with an isolation switch. Before inspection and/or maintenance of the unit, the isolation switch needs to be set “OFF”. The isolation switch could potentially be locked with a padlock.

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8 Unit (intended use)

The Mark Airstream units are designed for use in comfort installations. The units are not constructed for the extraction of aggressive damps and high temperatures. Every other use will be qualified as not intended use. The manufacturer does not accept any liability regarding the resulting damage or injury.

9 Liability

The Mark Airstream unit is designed and manufactured for use in “Balanced ventilation systems in comfort installations”. Every other use is considered as “unintended use” and can lead to damage to the Mark Airstream unit or personal injury, for which the manufacturer cannot be held accountable.

10 Warranty

Mark BV constantly aims for an optimal quality of the applied materials and methods of manufacturing regarding the goods produced. The installation should be executed by the current regulations and in accordance with the accompanying installation and maintenance instructions from Mark BV. The manufacturer guarantees the correct operation of the Mark Airstream for a period of one year after installation. Warranty can only be claimed for material- and/or constructional faults which arise during the warranty period. In case of a warranty claim the Mark Airstream unit may not be disassembled without written permission of the manufacturer. Warranty on spare parts can only be granted when they are supplied by the factory and are installed by the acknowledged installer. The warranty expires when the appliance is used without filters. Mark BV aims for an improvement of the products and reserves the right to make changes in the design or change specifications without informing in advance.

EG-Declaration of Conformity

Description machine: Mark Airstream

Meets guidelines:

- 2006/42/EC Machinery directive
- 2006/95/EC Low voltage directive
- EN 60204-1 Electrical equipment of machines
- 2004/108/EC EMC Electromagnetic compatibility directive
- NEN-EN 1886 Ventilation for buildings – Air handling Units –
Mechanical performance

If applicable:

- 90/396/EEC Directive on appliances burning gaseous fuels

EN

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MARK BV

BENEDEN VERLAAT 87-89
VEENDAM (NEDERLAND)
POSTBUS 13, 9640 AA VEENDAM
TELEFOON +31(0)598 656600
FAX +31 (0)598 624584
info@mark.nl
www.mark.nl

MARK DEUTSCHLAND GmbH

MAX-PLANCK-STRASSE 16
46446 EMMERICH AM RHEIN
(DEUTSCHLAND)
TELEFON +49 (0)2822 97728-0
TELEFAX +49 (0)2822 97728-10
info@mark.de
www.mark.de

MARK EIRE BV

COOLEA, MACROOM
CO. CORK (IRELAND)
PHONE +353 (0)26 45334
FAX +353 (0)26 45383
sales@markeire.com
www.markeire.com

MARK POLSKA Sp. z o.o

UL. KAWIA 4/16
42-200 CZĘSTOCHOWA (POLSKA)
PHONE +48 34 3683443
FAX +48 34 3683553
info@markpolska.pl
www.markpolska.pl

MARK BELGIUM b.v.b.a.

ENERGIELAAN 12
2950 KAPELLEN
(BELGIË/BELGIQUE)
TELEFOON +32 (0)3 6669254
FAX +32 (0)3 6666578
info@markbelgium.be
www.markbelgium.be

S.C. MARK ROMANIA S.R.L.

STR. LIBERTĂȚII Nr. 117
TÂRGU MURES, 540190
(ROMANIA)
TEL/FAX +40 (0)265-266.332
info@markromania.ro
www.markromania.ro

